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Controversies over stakeholder participation in marine protected area (MPA) management: a case study of the Cabo de Palos- Islas Hormigas MPA

ABSTRACT

There is considerable controversy over the role of stakeholder participation (SP) in the management of marine protected areas (MPAs). On the one hand, SP advocates claim that successful MPAs make use of SP in their design and management. On the other hand, SP critics argue that it is difficult to reach consensus between stakeholders on the need for MPAs, let alone the best way to manage them. This study aimed to investigate the extent of SP in the Cabo de Palos-Islas Hormigas MPA (CPH-MPA) in the Murcia province of south-eastern Spain, with a view to exploring this controversy. The research focused on: the perceptions of respondents on the value of SP in CPH-MPA decision-making; the current extent of SP in the CPH-MPA; the challenges to it; and ways of overcoming those challenges. Fieldwork was carried out during 2013-2015 involving the collection of qualitative data from key informant interviews, community meetings, and individual surveys. These data revealed a high degree of support for SP; very different perceptions about its current extent in CPH-MPA; the existence of many barriers to SP; and several recommendations to address these barriers. The study concluded that since immediate consensus on SP was absent, an experimental approach of adaptive co-management (ACM) could be adopted to determine what kind of SP works best.

Keywords: Stakeholder participation (SP); *Cofradía;* Resource users; Governance; Marine Protected Areas (MPA).

1 Introduction

The complexities of socio-ecological relationships make it crucial to examine conservation problems hand-in-hand with societal contexts, including local interests and perceptions (Voyer et al., 2012). In response to these complexities, there has been for many years considerable support in the literature and policy communities for stakeholder engagement in coastal fisheries management (Delaney et al., 2007; Mikalsen and Jentoft, 2001; Nenadovic and Epstein, 2016). Supporters claim that stakeholder participation (SP) in marine coastal management facilitates representation of diverse views and values; provides local knowledge and solutions tailored to specific contexts; prepares the ground for more effective implementation of policies for long-term management (Berghöfer et al., 2008; Pita et al., 2010); and legitimises marine resource governance (EU, 2013; Hogg et al., 2013; Nenadovic and Epstein, 2016). Indeed, advocates of SP assert that there is ample evidence to show that it is social factors and people's perceptions that are the primary determinants of the success or failure of marine protected areas (MPAs) (Blount and Pitchon, 2007; Christie, 2004; Kelleher and Recchia, 1998; Mascia, 2004). However, opponents of SP urge caution in giving weight to community views in conservation management decisions, on grounds that high levels of bottom-up SP are unsuitable given the ecological issues that MPAs entail (Jones, 2014; West et al., 2006; Wilkie et al., 2006). These critics of SP argue for a science-based, top-down approach, involving 'preservationist' or no-take solutions, which could be put at risk by excessive SP (Jones, 2014).

This theoretical controversy is reflected in practice, in that despite the efforts of its advocates, the extent of SP in the management of MPAs appears to be diminishing rather than growing, and currently there seems to be a trend away from the more active, towards the more passive, modes of SP in decision-making (Berkes, 2009; Gray and Hatchard, 2003; Nutters and Pinto da Silva, 2012). However, this trend is causing a backlash amongst stakeholders who are very dissatisfied with their current level of participation in MPA decision-making processes, criticising their lack of involvement in management decisions and in scientific assessments upon which those decisions are made, and deploring the negligible recognition and respect that is given to their knowledge (Delaney et al., 2007; Nielsen et al., 2004; Pita et al., 2010; Yates, 2014). It may be that scale is a significant factor in resolving this controversy – i.e. that SP is less appropriate and certainly more complex in large-scale MPAs on the high seas than in small-scale MPAs close to coastal communities (O'Leary et al., 2012). But even if SP is deemed appropriate in small-scale MPAs, there is still controversy over the kind of SP that a particular small-scale MPA should have. This is the issue with the present study of the Cabo de Palos-Islas Hormigas (CPH-MPA) in Spain, which is a small-scale MPA in a community that is strongly in favour of SP, but deeply divided over the type of SP that should exist.

The aim of the study is to investigate this issue in the CPH-MPA by examining the perceptions expressed by respondents about, first, the value of SP; second, the extent of SP in decision-making in CPH-MPA; third, the obstacles to such participation; and fourth, ways of improving it. Ecological studies show the CPH-MPA to be an ecological success and that protection has resulted in an increase in the abundance and biomass of numerous commercially important species, and a recovery of the marine ecosystem (Felix-Hackradt et al., 2013; García-Charton et al., 2004; Hackradt et al., 2014). The reason why the CPH-MPA was chosen for this study is because, while it has conserved marine resources, it has not been successful in meeting its socio-economic objectives, and arguably this is because it lacks the right kind of SP in its decision-making structures. The original contribution of this paper is that it adds to the growing sense that while in principle SP is an important part of good governance for fisheries management in general, and MPA management in particular, there is considerable variation in the types of SP that could be instituted, as well as a wide variety of opinions among stakeholders about the type of SP they would prefer. The paper's recommendation that an experimental approach to adaptive co-management (ACM) should be introduced into the CPH-MPA, reflects a view that is increasingly found in the literature that each MPA is unique (Pomeroy et al., 2004) and that its stakeholders should be allowed to choose the form of SP that suits them best (Fox et al., 2013; Nutters and Pinto da Silva, 2012; Reed, 2008).

In section 2, the case study's background is described. In section 3, the research methods used in this study are explained. In section 4, the results of the data are presented, and in section 5, these data are discussed for their insight into the four main issues in this study: the worth of SP; its current extent; barriers to it; and ways of improving it. In section 6, there is a list of recommendations for dealing with these issues.

2 Case study background

Cabo de Palos (pop. ~1200 (INE, 2015)) is a small village in Murcia, south-east Spain, which has a strong fishing heritage, but has recently become a popular tourist hotspot because of its legendary SCUBA diving attractions. The CPH-MPA (see Figure 1.), which is located at 37°39N, 0°26W, covering 19km^2, was established in 1995 by the Spanish government. As one of the country's first marine reserves, the designation, implementation and decision-making processes were a learning experience for all involved. For two years before its establishment, intense and often 'hard' discussions took place to establish the conditions of use of the reserve. The views of the *cofradía* appeared to prevail, since the CPH-MPA is a marine reserve of fisheries interest (MRFI) equivalent to an IUCN category VI MPA (Dudley et al., 2013), with an integral (category Ia) no-take zone. However, the objectives of CPH-MPA as described in its official terms of reference are not only to protect, regenerate and develop fishing resources for the maintenance of sustainable fisheries enabling artisanal fishermen in the area to preserve their traditional way of life, but also to support other low-impact activities (for example SCUBA-diving and environmental education) that contribute to economic development in the area (BOE, 2010). The initial reaction of the fishers was reportedly one of fear regarding the loss of access to valuable fishing grounds and the ban on certain fishing gears. However, gradually the fishers reported seeing a return of groupers that had been eliminated by illegal fishers and began to have confidence in the reserve. But later, the fishers felt deceived as the use of the reserve shifted in favour of divers, and the initial agreements made with fishers regarding the use of the reserve were ignored.

The artisanal fishing fleet is small, and like other small-scale fishing fleets in the Mediterranean has been undergoing gradual decline (Fabio et al., 2016; Gómez et al., 2006). In 1993, there were 14 active vessels; 10 in 2010 when the reserve census was last modified (Esparza, 2010); and six at the time of study. To be included in the reserve census, artisanal vessels must have been operating in the area of the reserve for four years before the enactment of the marine reserve order (BOE, 2010). The system does not permit the addition of any new vessels to the census or the transfer of licences between vessels, so if a vessel is no longer seaworthy and a new boat is purchased, that fisher is not permitted to continue fishing in the reserve with the newly acquired vessel- the licence belongs to the vessel. If the boat is retired, the licence is lost, though another individual may buy a licenced boat and use it to fish in the reserve. These six vessels currently provide employment to 13 full-time fishers, and several part-time employees. The artisanal fishers from CPH-MPA belong to the second largest *cofradía* in the region - Cartagena (54 boats). *Cofradías* are local non-profit corporations with public rights, which represent the interests of the fishing sector by acting "as consultative and cooperative bodies for the administration, undertaking economic, administrative and commercial management tasks and with the ability to cooperate in matters of regulating access to the resources and informing over infractions occurring in their territory" (Pascual-Fernández, 1999:71). As in other regions, there is a strong tradition of 'family fishing' (Herrera-Racionero et al., 2015): almost 80% of the fleet in the CPH-MPA have familial links, and strong familial links also exist with the patron mayor (who is director of the *cofradía*). Within the reserve, the only fishing gears that are permitted are trammel nets and long line. Since the creation of CPH-MPA, the SCUBA diving industry has grown

substantially with nine dive centres operating at the time of study. These dive centres provided full-time employment to 38-40 ‘permanent’ employees, and many additional part-time posts during the peak season. Since the SCUBA diving industry is relatively new, unlike the fishing industry it does not have a well-recognised and respected representative organisation.

With regard to the management system of MPAs in Spain, the country aims to balance the top-down authority of the national and regional governments with the bottom-up organisation of fishermen within *cofradías* (Alegret, 1999; Herrera-Racionero et al., 2015). This may suggest a co-management regime, but in practice, the national government plays the dominant role in the management of fisheries, with some functions being devolved to the regional governments, and a consultative role given to the *cofradias*, vessel owners' associations, producers' organisations, and the unions (Suárez de Vivero and Frieyro de Lara, 1997). Theoretically, *cofradías* play an important role in participatory management systems, helping to define needs and to channel aid within the sector (Bavinck et al., 2015), but the bargaining power of *cofradías* varies regionally (Jentoft et al., 2012; Pascual-Fernández, 1999). Some *cofradías* have played an important role in the implementation of MPAs: for example, La Restinga - Canary Islands (Revenga, 2003), Lira - Galicia (Perez de Oliveira, 2013), and L’Estartit, and Medes Islands - Catalonia (Ballester-Nolla, 2008). But elsewhere, the growing influence of other organisations in the fisheries sector has reduced their bargaining power.

There is a complicated (even opaque) relationship between the national, regional, and community spheres of responsibility for management of the CPH-MPA. The CPH-MPA is managed at national level by the National Ministry of Agriculture, Food and Environment and at regional level by the Council of Agriculture and Water of the Region of Murcia. These two institutions are collectively referred to as ‘the administration’ or ‘management’ throughout this paper. A formal framework agreement outlines the collaboration and shared management responsibility of each body with regard to the CPH-MPA. For example, the two administrations are jointly responsible for protecting the marine environment, regenerating commercially valuable fish stocks, providing and maintaining a reserve office, and ensuring monitoring, research, information and outreach. The national administration has a duty to provide beaconing, signalling, and a surveillance vessel, while the regional ministry has to contribute an additional surveillance vessel. This collaboration is overseen by a formal monitoring committee, which includes representatives from both the national and regional ministries, which are supposed to meet annually to review progress. An ad hoc advisory board, which supports the management of the MPA, is composed of representatives from the administration, research institutions, municipalities, environmental organisations, fisheries sector (i.e. *cofradía* representatives, trade union representatives, and recreational fishing representatives), relevant marine business organisations, and a representative of the federation of underwater activities in the region of Murcia.

3 Methods

3.1 Data collection

Fieldwork was carried out during 2013-2014 involving the collection and analysis of data from: survey questionnaires (SQs), key informant interviews (KIs), observation, community meetings, and literature

review. The target population for the survey questionnaires included resource users (17 fishers, both active and recently retired, and 37 full-time employees of SCUBA dive centres); and for the semi-structured interviews with key informants (KIs) included three government officers, four researchers, two fisheries sector representatives, two SCUBA diving sector representatives and two NGO representatives. Respondents were targeted through opportunistic and snowball sampling (Bryman, 2012) from July to September 2013. Out of the 59 resource users identified as being eligible to participate in the fieldwork, 5 refused, giving a response rate of 92%. All targeted KIs responded. Gender distribution of resource users interviewed was 91% male and 9% female. The fishing sector in Cabo de Palos is dominated by males, which is a common trend, though women play a significant part in other fisheries such as in Lira- (Perez de Oliveira, 2013). The female resource users were all employees within the dive industry. Community respondents were 56% male and 44% female. Before the main fieldwork, a pilot study helped validate the survey layout and question phrasing. Table 1 provides the questions asked which comprised opinions on the current management of the MPA and the marine environment, how decisions are made, what opportunities for participation exist, and how information about decisions taken is communicated. As part of a wider study, the survey questionnaire also covered issues of environmental change, environmental management, and social capital, and gathered household and demographic information from resource users. Trained research assistants along with the first author conducted interviews and gathered field notes. Observation was used in two main ways during the research period: by the lead author as a non-participant observer of interactions between different stakeholders; and by two of the co-authors as participants in CPH-MPA management meetings. From direct experience, these two decision-making meetings followed the format of informing/consulting, where some decisions had already been taken before the meeting was held, yet some opportunity was provided for resource users to declare whether or not they agreed with the decisions. Three community validation and feedback meetings were held between 2013 and 2014, allowing for open discussion around key issues arising from the results; additional data to be collected through participative exercises; clarification of contradictory and confusing results; and validation and triangulation of the data.

3.2 Data analysis

Audio recordings and field notes were transcribed verbatim, and professionally translated from Spanish to English. Qualitative data were organized using Nvivo10 analysis software (QSR, 2012). Some themes were identified from perceptions of participation levels and of barriers to participation identified in the literature, but most themes were chosen through an inductive process of reading and re-reading the completed survey questionnaires and KI interview transcripts, identifying repeated words and themes within and between respondents, and grouping the codes generated into collections of similar content (Bryman, 2012). This technique, borrowed from grounded theory (Glaser and Strauss, 1967), allows issues to arise out of the data, rather than from pre-conceived assumptions.

4 Results

There are four main topics in this Results section: respondents' perceptions of (1) the value of SP; (2) types of SP; (3) obstacles to SP; and (4) ways of improving SP.

4.1 Value of SP in CPH-MPA

There was strong support for SP expressed by most respondents. What follows is a sample of their comments. Fishers and the *cofradía* said that what is needed is: *"a good management from the bottom up."* They wanted management to take more account of the views of fishers and of divers. Some fishers expressed strong resentment at their exclusion from decisions that affected them and their families' lives: "*I don't know why three or four men from the European Commission have to decide over my future or the future of my children, but that's the reality."* Divers said that marine resource users should be allowed to participate in management decision-making: while management should manage, it should do so consensually, with the agreement of fishers and divers. NGO representatives said there was a need for decisions to be made *"from the bottom up."* Researchers said that the quality of government decisions would improve if people with practical knowledge of the sea participated in making them. When asked if they would like the opportunity to participate or have greater participation in CPH-MPA management decision-making processes, 82% of fishers and 91% of divers agreed, saying that they had much local knowledge to offer and a desire to do what is right for the future well-being of the reserve.

4.2 Types of SP occurring in CPH-MPA

Resource users were asked to respond to a series of statements using a Likert scale regarding their level of participation in the MPA, and whether or not they thought that MPAs take their opinions into account (Table 2). On the level of participation, 44% of fishers agreed they were informed, whereas 62% of divers claimed not to be informed. For higher levels of SP, both fishers and divers reported levels of disagreement above 55%. Both groups held that MPAs should be more considerate of users' opinions.

Respondents perceived five types of SP in CPH-MPA, ranging from a less active level to a more active level (Gray, 2005; Nutters and Pinto da Silva, 2012). This spectrum, which has been adapted from the typologies compiled by five influential writers (Arnstein, 1969; Bouamrane, 2006; Lawrence, 2006; Pimbert and Pretty, 1997; Pretty, 1995), contains the following types of SP: *passivity; communication*; *consultation*; *influence*; and *collaboration.* This is a descriptive, not a normative spectrum: it distinguishes between less active and more active SP, but it does not make the assumption that less active is bad and more active is good.

4.2.1 Passivity

The least active form of SP is passivity, which incorporates negligible SP. Many respondents held that the CPH-MPA was managed by a system which afforded virtually no opportunity for SP. For example, fishers said: "*They don't let us take part*"; *"Madrid decides, gives orders and it's done.*" A

cofradía representative remarked that: *"it would seem that we went back to Franco times when you do what they tell you to do and that's all."* A researcher said: "*There are no chances of participation."*

4.2.2 Communication

The next level of SP mentioned by respondents was communication. Some fishers acknowledged that they received communication from management. For example, one *cofradía* representative said that: *"The Fisheries Service informs us too whenever they offer some aids for fishermen, etc."* Likewise, a diver said: *"We, users of marine resources are being informed about the management."* Managers maintained that they regularly directed flows of information to fishers. However, many fishers said they were not given information by management: "*We receive zero information from the bodies"; "once the decisions are made they don't explain them."* Moreover, the *cofradía* representative said the regional management (though not the national management) ignored their attempts to communicate with them: *"the National Ministry does reply whenever we appeal some piece of legislation or report, even if it's just to say no to our proposal. At least they reply when we ask something. On the other hand in the Region, they don't even bother to reply with a yes or a no."* Another fisher said: *"I have complained many times in Cartagena but they don't reply."* A diver asserted that the regional administration sometimes took years to respond to their communications. These findings were corroborated by an exercise undertaken in community feedback meetings, which explored resource users' perceived accessibility to different institutions involved in the management of the MPA. The results revealed that despite the physical distance between the resource users and the national ministry in Madrid, resource users perceived the national ministry as more accessible than the regional. Another controversial issue of communication was over the existence of meetings between marine users and marine managers. Some fishers acknowledged that regular meetings took place with both national and regional management, and administrators confirmed this. Researchers and NGO representatives also said there were meetings between fishers and managers. However, many fishers complained about a lack of meetings: *"No meetings are held"; "Neither the Fisheries Service nor Madrid have ever held a meeting with us, the fisheries sector."*

4.2.3 Consultation

The next level of SP identified by respondents was consultation. Many respondents said there was consultation. Indeed, a *cofradía* representative said: *"Every time the administration is going to make some new agreement or project they call us and they consult us*." A diver said that: "*Usually we are consulted for the regulation, same with fishermen*." National administrators claimed the government not only honoured its obligation to consult all MPA stakeholders but that: *"decisions are adopted after consultation, evaluation and almost negotiation with them… they are taken into consideration.*" However, some respondents complained that such consultation was hollow. For example, an NGO representative said: *"It might be called a consulting or a dialogue but it's not a real decision making kind of participation*."

4.2.4 Influence

The next level of SP identified by respondents was influence. Several respondents perceived that they exerted some influence on management. For example, a *cofradía* representative said: "*We don't make decisions, we depend on the administration. But if they ask us for information we can have some influence."* A diver said: "*they* [management] *begin to take our opinion into consideration."* An NGO representative claimed that: *"many projects have been stopped thanks to this and other organizations."* On the other hand, many respondents perceived their level of influence in CPH-MPA decision-making processes to be low. For example, a *cofradía* representative said: "[Fishers have] *very little influence because they* [the administration] *don't contact the cofradía.*" A diver said: *"we have no pressure and there is no way to channel the real interests to confront the wall imposed by the administration."*

4.2.5 Collaboration

The strongest kind of participation alluded to by respondents was collaboration. Some respondents claimed there was a healthy form of collaborative management in CPH-MPA. For example, a national administrator claimed that it was virtually co-management: *"Cabo de Palos is a very interesting example of collaboration… we are in a joint venture of mutual benefit... It's been done hand in hand with them* [fishers]... *25 years ago it wasn't called co-management but it's a model based 100% on the idea of co-management*." A regional administrator referred to: *"a management committee for the reserve with several actors involved such as the fisheries sector, the State General Administration, the Regional Administration, the Town Hall of Cartagena, Tourism, Diving,* etc.*"* On the other hand, some fishers said there was no desire among management for collaboration, and so-called collaborative arrangements were a sham.

4.3 Obstacles to SP in CPH-MPA

In this section, we consider seven types of obstacle to the quality of SP that were mentioned by respondents. In the next section, we consider several ways of improving the quality of SP that were suggested by respondents.

4.3.1 Lack of administrative will

The most frequently expressed obstacle to SP was administrators' lack of will. One researcher referred to: *"an absolute lack of will to incorporate actors in management and to yield part of their decision power; I think this is a problem of management attitude or culture, which is very old, and not in tune with the current times."* One reason for regional administrators' indifference to SP according to a researcher is that all decisions are taken in Madrid: *"the authorities from Murcia tend to follow blindly the national policies; there is no will to do something that hasn't been dictated from Madrid."* Another reason, according to a fisher, is aversion to conflict: *"they don't convene any meetings to avoid conflicts and they give us excuses."* An NGO representative corroborated this claim: *"the administrations… fear social opposition, for example from the fisheries sector, when it comes to*

298 *implementing marine reserves."* One respondent alleged that administrators were corrupt, and more
299 preoccupied with lining their pockets than with improving the quality of CPH-MPA governance. Some
300 respondents inferred that there was lack of commitment on both sides - the administration failed to
301 provide a platform for participation, while fishers failed to collaborate. This joint failure is a finding
302 supported by previous studies (Hollup, 2000; Jentoft and McCay, 1995).

303 ***4.3.2 Lack of funding***

304 Another obstacle to SP was perceived to be lack of money- a common issue for MPAs
305 (Berghöfer et al., 2008; Nutters and Pinto da Silva, 2012; Pomeroy et al., 2001). An administrator said:
306 *"Meetings are held periodically to get to know their opinion and consider management alternatives but*
307 *due to the budget situation this is halted at the moment."* Meetings for SP entail travel costs, and cuts
308 to public expenditure meant such costs could no longer be met by government.

309 ***4.3.3 Fishers' low status***

310 Another obstacle to SP was perceived to be the poor status that fishers had in the eyes of
311 managers and researchers (Hollingshead, 2011; Hollup, 2000; McGoodwin, 1995), who regarded
312 fishers as inferior, using terms like "*uneducated", "cheats", "closed minds*", and *"lazy*" to describe
313 them. A *cofradía* representative said: "*They come and make claims against us, they say we are*
314 *predators… at the European level Brussels speaks of the fisheries sector as criminals*." Some fishers
315 internalised these prejudices, as an NGO representative remarked: "*when fishermen sit to talk with*
316 *managers they feel inferior."* The fishers' poor level of education may be a contributory cause of their
317 poor status and low self-esteem: 65% had primary school level education, 18% secondary school, and
318 only 18% college level. A diver (divers had a higher level of education - 9% primary; 9% secondary;
319 14% technical/professional; 30% college; and 38% university) said: "*fishing is an activity for people*
320 *who cannot study, who didn't have that chance*." A researcher said: "*because they have little education,*
321 *and this is typical of Spain, they think that going and talking to an administrator and telling them*
322 *what's happening is something beyond their ability."*

323 ***4.3.4 Lack of respect for managers***

324 Another perceived obstacle to SP was the lack of respect that resource users felt for the
325 authorities. Fishers had little confidence in the knowledge of fisheries managers: "*The problem we have*
326 *in Murcia* [regional ministry] *is that the people in charge of the administration are people whose*
327 *speciality is not this."* A diver said: "*Management is bad because decisions are taken in an office not*
328 *knowing what's going on here."*

329 ***4.3.5 Dispute over science***

330 Another perceived obstacle to SP was a dispute over the evidence used to make decisions
331 (Coll et al., 2014; Mackinson et al., 2011). Fishers claimed that data collected by fisheries scientists
332 was flawed. Other respondents lamented the fact that fishers' ecological knowledge – i.e. fishers'
333 contribution to fisheries science - was ignored by managers. For example, a researcher said: "*they*

[fishers] *have an incredible knowledge of the matter and this traditional knowledge is not taken into consideration when decisions are made."* This conflict reflects the classic tension between positivist scientific knowledge and experiential fisher's local ecological knowledge (Nielsen et al., 2004; Pálsson, 1995), which reinforces the barrier between management and fishers.

4.3.6 Failure of the cofradía to represent fishers

Another perceived obstacle to SP was the failure of the *cofradía* to represent fishers effectively in their relationship to fisheries authorities. When fishers were asked from whom they received information, only two out of seventeen (12%) reported the *cofradía* as the source. Three reasons explain this disconnect between artisanal fishers and the *cofradía:* first, although *cofradías* represent both artisanal and industrial fishing, the latter generate the majority of the institution's income; second, there is evidence that some individuals have used *cofradías* as instruments to further their personal interests, suggestive of the 'tyranny of localism' (Lane and Corbett, 2005; Pascual-Fernández, 1999); and third, *cofradías* lack staff with sufficient technical and promotional skills (Alegret, 2000; Bavinck et al., 2015). The patron mayor of the *cofradía* himself is not a fisher, which has had some effect on the confidence the fishers feel towards their representative. Several respondents, including fishers and researchers, indicated that the *cofradía* was not particularly effective in achieving its objectives and suggested that the patron mayor and those with responsibility to best represent the fishers lacked the necessary leadership and skills to drive change and generate motivation. These deficiencies chime with findings on other fishers' organisations (Hollup, 2000; Jentoft et al., 2010; Nutters and Pinto da Silva, 2012; Suarez de Vivero et al., 2008; Yates, 2014).

4.3.7 Personal and sectoral conflicts

The final perceived obstacle to SP was the high level of personal and sectoral conflicts, both within and between stakeholder groups (Jones, 2014). Throughout the fieldwork, there was substantial evidence of underlying personal conflicts, which impeded communication and participation in decision-making processes within and between sectors. For example, a researcher said: "*fishermen are unable of getting together to write a proposal because they have conflicts amongst themselves, they mistrust each other because of old issues related to fishing, they don't know how to cooperate*." An NGO representative said that: "*within the fisheries sector people are at odds with each other*." There was also evidence of conflicts between sectors, especially between fishers and divers and between resources users and the administration. A diver said: "*Fishermen… are a special group because they think the sea is theirs and it's difficult to communicate and collaborate with them*."

4.4 Ways of improving SP in CPH-MPA

Several ways of improving SP were proposed by respondents. First, self-governance by resource users was suggested. For example, a researcher said: *"I befriend fishermen and have always told them that they should have had a more active participation in the reserve, even managing the entrance of divers*." An NGO representative agreed, saying fishers: *"should be the primary managers of the resource."* Second, an NGO representative proposed co-management: *"I would like to establish*

processes of co-management so that users and the community can take part in the decisions." Third, another NGO representative proposed: "*creating measures that make public participation mandatory."* Fourth, a researcher proposed a round table: *"there is no forum or round table to work, that's where the management policy should be created... if you don't participate in the round table things are often decided from behind."* Fifth, a national administrator proposed that funding should be restored to management budgets to finance SP. Sixth, a fisher proposed that meetings should be automatically held before management measures were drawn up: "*I think before creating a management plan they should meet with us, with the professionals of the fisheries sector, seek our advice about what and when to fish."*

5 Discussion

From the above results, three main themes emerged for discussion.

5.1 Why the wide variation in perceptions of SP?

First, why was there such wide variation in stakeholders' perceptions about the actual extent of SP in the management of the CPH-MPA? Even stakeholders within the same group (such as fishers) perceived different kinds of SP operating. One explanation might be that they interpreted the meaning of SP in different ways, so where one respondent saw SP, another would not (Nutters and Pinto da Silva, 2012). However, this explanation cannot account for the fact that respondents differed over whether or not an agreed kind of SP took place. For example, they differed over whether or not there were meetings held between fishers and administrators. Why do many respondents claim there were no meetings between fishers and administrators, whereas many other respondents claim there were such meetings? One reason may be that because resource users resented their exclusion from meetings, they exaggerated the extent of that exclusion, while administrators resented criticism for failing to arrange meetings, and so exaggerated the extent to which meetings took place. Another explanation for the divergence of views on the extent of SP may be the partial perspectives that most respondents have of the CPH-MPA. For example, many artisanal fishers are independent and lone workers who keep themselves to themselves and prefer to spend their time at sea rather than in meetings (McGoodwin, 1995). Accordingly, many of them may have limited knowledge of how fisheries management decisions are actually reached. Likewise, many managers spend most of their time in their offices and do not venture much out into the practical world of fishers. Accordingly, many of them may have limited first-hand knowledge of whether and how fishers perceive they are excluded from contributing to fisheries management decision-making (Herrera-Racionero et al., 2015). An administrator admitted that their knowledge of the dive industry is very scant: "*that's beyond our competency."* The result is that each side has a sketchy perception of the activities of the other side, and so different assessments of the extent of SP are hardly surprising.

5.2 The obstacles to SP are adventitious

All seven obstacles to SP are adventitious, not immoveable or inevitable. Three of them – lack of will; lack of funding; and dispute over science – could be overcome by more attuned and sensitive

408 governance. Lack of will is myopic, turning a blind eye to future flashpoints. Lack of funding should
409 stimulate innovative ways of bringing parties together inexpensively (Berghöfer et al., 2008). Dispute
410 over science could be addressed by arranging more meetings between fishers and scientists (Mackinson
411 et al., 2011). The remaining four obstacles - fishers' poor status; lack of respect for managers; failure of
412 *cofradías*; and personal conflicts – are largely cultural and can be overcome by increased
413 empowerment and social capital, though this takes more time (Hogg et al., 2013).

414 ### 5.3 Assumption that the more SP there is, the better

415 Much of the above discussion is premised on the view held by most respondents that SP is
416 valuable for decision-making in the CPH-MPA, and that up to a point, the more SP there is, the better
417 for the running of the CPH-MPA. But this is a highly controversial assumption, and one that is
418 increasingly questioned in the literature as case studies of SP in MPAs show disappointing results
419 (Cooke and Kothari, 2001; Hickey and Mohan, 2004; Jones, 2014; Lane and Corbett, 2005;
420 McClanahan, 2004; Saunders et al., 2007). One of the assumptions made by some respondents was that
421 the greater the amount of SP, the greater the degree of consensus. But more SP may lead to more
422 fractiousness being expressed rather than more consensuses being reached (Jones, 2014). Moreover, the
423 question arises of whether there ought to be extensive SP in decision-making if it leads to attempts to
424 undermine the obligations imposed on member states by the EU under the Habitat Directive and the
425 Common Fisheries Policy (Jones, 2014).

426 ## 6 Conclusion

427 In conclusion, this study offers five recommendations to help deal with the controversies over
428 SP in the CPH-MPA. The real question is not whether there should be any SP in the CPH-MPA
429 management system, since there already are some SP elements in it, and most respondents seem to
430 believe they should be there. The real question is what kind of SP should there be, and to what extent.
431 Our first recommendation addresses this question by proposing that since an immediate consensus is
432 unlikely on the proper role and extent of SP, an experimental approach of adaptive management (AM)
433 could be adopted to determine what kind of SP might work best, and how to manage expectations
434 about the level of participative decision-making that is feasible (Fox et al., 2013; Nutters and Pinto da
435 Silva, 2012). The remaining four recommendations are made to facilitate this experimental process. For
436 example, our second recommendation is to initiate better communication between resource users and
437 the administration. Good communication channels and open, on-going dialogue are necessary to
438 overcome distrust between actors; to help fishers feed their experiential knowledge into management
439 decision-making (Coll et al., 2014; Damalas et al., 2015; Mackinson et al., 2011); and to enable
440 managers to explain decisions taken and how fishers' information has been used in them (Cvitanovic et
441 al., 2015; Yates, 2014). To achieve this, there needs to be a reversal in the cuts in the budgets of
442 fisheries managers allocated for stakeholder consultation processes (Berghöfer et al., 2008; Gill et al.,
443 2017; Pomeroy et al., 2001). Our third recommendation is to identify knowledge brokers (Crona and
444 Bodin, 2006; Weiss et al., 2012) (such as the Spanish Oceanographic Institute and the universities) and
445 encourage a two-way dialogue with fishers (Cvitanovic et al., 2015; Mackinson et al., 2011). For

example, it is suggested that knowledge co-production and participatory research projects be developed to help garner increased support from fishers by including fishers' knowledge and ensuring that research is more in line with local user needs, as has been successfully illustrated in previous studies (Leleu et al., 2012; Mackinson et al., 2011). Our fourth recommendation is capacity building (Gill et al., 2017) for every group involved, administrators and resource users, increasing their training and experience with participatory processes, to ensure more equitable participation, empowerment of the different actors, and increased confidence in the decision-making process (Alegret, 2000; Bavinck et al., 2015; Nutters and Pinto da Silva, 2012). Our fifth recommendation is to give greater attention to the selection of SP representatives, not only for the resource users but also for all other institutions involved. This would enable users to capitalize on the strength of their representatives, thereby focusing their pressure on the regional ministry, with whom travel and transportation costs associated with meetings would be lower than with the national ministry based in Madrid (Aanesen et al., 2014). These five recommendations are practical proposals designed to improve the management system for the CPH-MPA by injecting modest amounts of SP into the decision-making process. They are not intended to transform the process, but only to smooth its operations.

7 Ethics statement

Permission to conduct this study was granted by the Ministry of Agriculture, Food, and Environment in Spain, and ethics approval was obtained through submission of an ethics assessment to the University of Murcia Ethical Committee. Participants were informed of the aims of the project, how data would be used, and how they could access the study results. Researchers obtained oral consent from participants before conducting interviews. Personal identifying information was replaced with respondent ID numbers to ensure anonymity.

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9 References

Aanesen, M., Armstrong, C.W., Bloomfield, H.J., R ckmann, C., 2014. What does stakeholder involvement mean for fisheries management? Ecology and Society 19. doi:10.5751/ES-06947-190435

Alegret, J.L., 2000. Economics and political anthropology of fisheries governance: The incipient failure

484 of collective action in Catalan Cofradías, in: Hatcher, A., Robinson, K. (Eds.). Presented at the
485 Management Institutions and Governance Systems in European Fisheries, Vigo, Proceedings of
486 the Third Concerted Action Workshop on Economics and the Common Fisheries Policy, Spain,
487 28-30 October 1999.University of Portsmouth. CEMARE Miscellaneus publications No 48,
488 Portsmouth., pp. 179–195.
489 Alegret, J.L., 1999. Anthropology of fisheries governance: the incipient failure of collective action in
490 Catalan "Cofradías." EuropÆa 2, 45–63.
491 Arnstein, S.R., 1969. A Ladder Of Citizen Participation. Journal of the American Institute of Planners
492 35, 216–224.
493 Ballester-Nolla, A., 2008. Proyecto para el establecimiento de un Parque - Reserva Submarino en las
494 Islas Medas (Costa Brava, Gerona). Inmersión y Ciencia 3, 7–33.
495 Bavinck, M., Jentoft, S., Pascual-Fernández, J.J., Marciniak, B., 2015. Interactive coastal governance:
496 The role of pre-modern fisher organizations in improving governability. Ocean & Coastal
497 Management 117, 52–60.
498 Berghöfer, A., Wittmer, H., Rauschmayer, F., 2008. Stakeholder participation in ecosystem-based
499 approaches to fisheries management: A synthesis from European research projects. Marine Policy
500 32, 243–253.
501 Berkes, F., 2009. Evolution of co-management: Role of knowledge generation, bridging organizations
502 and social learning. Journal of Environmental Management 90, 1692–1702.
503 Blount, B., Pitchon, A., 2007. An anthropological research protocol for marine protected areas:
504 creating a niche in a multidisciplinary cultural hierarchy. Human Organization 66, 103–111.
505 BOE, 2010. Boletín oficial del estado, Ministero de Medio Ambiente, y Medio Rural y Marino,
506 http://www.boe.es. 3823.
507 Bouamrane, M., 2006. Biodiversity and stakeholders: concertation itineraries. Biosphere reserves,
508 technical notes 1. Paris: UNESCO.
509 Bryman, A., 2012. Social Research Methods, 4 ed. Oxford University Press, NY.
510 Christie, P., 2004. Marine protected areas as biological successes and social failures in Southeast Asia.
511 American Fisheries Society Symposium 42, 155–164.
512 Coll, M., Carreras, M., Ciércoles, C., Cornax, M.-J., Gorelli, G., Morote, E., Sáez, R., 2014. Assessing
513 fishing and marine biodiversity changes using fishers' perceptions: the Spanish Mediterranean and
514 Gulf of Cadiz case study. PLoS One 9, e85670–e85670.
515 Cooke, B., Kothari, U., 2001. Participation: the New Tyranny? Zed Books.
516 Crona, B., Bodin, Ö., 2006. What you know is who you know? Communication patterns among
517 resource users as a prerequisite for co-management. Ecology and Society 11, 7.
518 Cvitanovic, C., Hobday, A.J., van Kerkhoff, L., 2015. Improving knowledge exchange among
519 scientists and decision-makers to facilitate the adaptive governance of marine resources: A review
520 of knowledge and research needs. Ocean & Coastal Management 112, 25–35.
521 Damalas, D., Maravelias, C.D., Osio, G.C., Maynou, F., Sbrana, M., Sartor, P., 2015. "Once upon a
522 time in the Mediterranean" long term trends of Mediterranean fisheries resources based on fishers'
523 Traditional Ecological Knowledge. PLoS One 10, e0119330.
524 Delaney, A.E., McLay, H.A., van Densen, W.L.T., 2007. Influences of discourse on decision-making
525 in EU fisheries management: the case of North Sea cod (Gadus morhua). ICES Journal of Marine
526 Science 64, 804–810.
527 Dudley, N., Shadie, P., Sholton, S., 2013. Guidelines for Applying Protected Area Management
528 Categories including IUCN WCPA best practice guidance on recognising protected areas and
529 assigning management categories and governance types. IUCN, Gland, Switzerland.
530 Esparza, O., 2010. Estudio de la pesca artesanal en el entorno de la reserva marina de Cabo de Palos-
531 Islas Hormigas: estrategias, efecto de la protección y propuestas para la gestión. Phd Thesis,
532 Universidad de Murcia.
533 EU, 2013. Regulation (EU) No 1380/2013 of 11 December 2013-on the Common Fisheries Policy.
534 Fabio, P., Silvia, C., Paolo, V., Anelli Monti, M., 2016. Present and future status of artisanal fisheries
535 in the Adriatic Sea (western Mediterranean Sea). Ocean & Coastal Management 122, 49–56.
536 doi:10.1016/j.ocecoaman.2016.01.004
537 Felix-Hackradt, F.C., Hackradt, C.W., Treviño-Otón, J., Pérez-Ruzafa, A., Garcia-Charton, J.A., 2013.
538 Temporal patterns of settlement, recruitment and post-settlement losses in a rocky reef fish
539 assemblage in the South-Western Mediterranean Sea. Marine Biology 160, 2337–2352.
540 doi:10.1007/s00227-013-2228-2
541 Fox, E., Poncelet, E., Connor, D., Vasques, J., Ugoretz, J., McCreary, S., Monié, D., Harty, M.,
542 Gleason, M., 2013. Adapting stakeholder processes to region-specific challenges in marine
543 protected area network planning. Ocean & Coastal Management 74, 24–33.

544 doi:10.1016/j.ocecoaman.2012.07.008
545 García-Charton, J.A., Perez-Ruzafa, A., Sánchez-Jerez, P., Bayle-Sempere, J.T., Reñones, O., Moreno,
546 D., 2004. Multi-scale spatial heterogeneity, habitat structure, and the effect of marine reserves on
547 Western Mediterranean rocky reef fish assemblages. Marine Biology 144, 161–182.
548 doi:10.1007/s00227-003-1170-0
549 Gill, D.A., Mascia, M., Ahmadia, G.N., Glew, L., Lester, S.E., Barnes, M., Craigie, I., Darling, E.S.,
550 Free, C.M., Geldmann, J., Holst, S., Jensen, O.P., White, A.T., Basurto, X., Coad, L., Gates, R.D.,
551 Guannel, G., Mumby, P.J., Thomas, H., Whitmee, S., Woodley, S., Fox, H.E., 2017. Capacity
552 shortfalls hinder the performance of marine protected areas globally. Nature 1–16.
553 doi:10.1038/nature21708
554 Glaser, B.G., Strauss, A.L., 1967. The Discovery of Grounded Theory. Aldine Transaction.
555 Gómez, S., Lloret, J., Dr., Demestre, M., Riera, V., 2006. The Decline of the Artisanal Fisheries in
556 Mediterranean Coastal Areas: The Case of Cap de Creus (Cape Creus). Coastal Management 34,
557 217–232.
558 Gray, T., 2005. Participation in Fisheries Governance. Kluwer Academic Pub.
559 Gray, T., Hatchard, J., 2003. The 2002 reform of the Common Fisheries Policy's system of
560 governance—rhetoric or reality? Marine Policy 27, 545–554.
561 Hackradt, C.W., García-Charton, J.A., Harmelin-Vivien, M., Perez-Ruzafa, A., Le Direach, L., Bayle-
562 Sempere, J., Charbonnel, E., Ody, D., Reñones, O., Sánchez-Jerez, P., Valle, C., 2014. Response
563 of Rocky Reef Top Predators (Serranidae: Epinephelinae) in and Around Marine Protected Areas
564 in the Western Mediterranean Sea. PLoS One 9, e98206. doi:10.1371/journal.pone.0098206
565 Herrera-Racionero, P., Lizcano-Fernández, E., Miret-Pastor, L., 2015. “Us” and ‘them’. Fishermen
566 from Gandía and the loss of institutional legitimacy. Marine Policy 54, 130–136.
567 Hickey, S., Mohan, G., 2004. Participation: From Tyranny to Transformation? Zed Books.
568 Hogg, K., Noguera-Méndez, P., Semitiel- García, M., Giménez-Casalduero, M., 2013. Marine
569 protected area governance: Prospects for co-management in the European Mediterranean.
570 Advances in Oceanography and Limnology 4, 241–259.
571 Hollingshead, A.B., 2011. Four Factor Index of Social Status. Yale Journal of Sociology 8, 197.
572 Hollup, O., 2000. Structural and sociocultural constraints for user-group participation in fisheries
573 management in Mauritius. Marine Policy 24, 407–421.
574 INE (Ed.), 2015. Instituto Nacional de Estadística, www.ine.es. ed. URL http://www.ine.es (accessed
575 3.3.15).
576 Jentoft, S., McCay, B., 1995. User participation in fisheries management: lessons drawn from
577 international experiences. Marine Policy 19, 227–246.
578 Jentoft, S., Pascual-Fernández, J.J., la Cruz Modino, de, R., Gonzalez-Ramallal, M., Chuenpagdee, R.,
579 2012. What Stakeholders Think About Marine Protected Areas: Case Studies from Spain. Human
580 Ecology 40, 185–197.
581 Jones, P., 2014. Empirical framework for analysing MPA governance approaches, 1st ed. Routledge.
582 Kelleher, G., Recchia, C., 1998. Editorial: lessons from marine protected areas around the world. Parks
583 8, 1–4.
584 Lane, M.B., Corbett, T., 2005. The Tyranny of localism: Indigenous participation in community-based
585 environmental management. Journal of Environmental Policy & Planning 7, 141–159.
586 doi:10.1080/15239080500338671
587 Lawrence, A., 2006. “No Personal Motive?” Volunteers, Biodiversity, and the False Dichotomies of
588 Participation. Ethics, Place and Environment 9, 279–298. doi:10.1080/13668790600893319
589 Leleu, K., Alban, F., Pelletier, D., Charbonnel, E., Letourneur, Y., Boudouresque, C.F., 2012. Fishers'
590 perceptions as indicators of the performance of Marine Protected Areas (MPAs). Marine Policy
591 36, 414–422.
592 Mackinson, S., Wilson, D.C., Galiay, P., Deas, B., 2011. Engaging stakeholders in fisheries and marine
593 research. Marine Policy 35, 18–24.
594 Mascia, M., 2004. Social dimensions of marine reserves, in: Sobel, J., Dahlgren, C. (Eds.), Marine
595 Reserves: a Guide to Science, Design and Use. Island Press, Washington, USA, p. 164.
596 McClanahan, T., 2004. The limits to beyond boundaries. Aquatic Conservation 14, 1–4.
597 McGoodwin, J.R., 1995. Crisis in the World's Fisheries: People, Problems, and Policies. Stanford
598 University Press.
599 Mikalsen, K.H., Jentoft, S., 2001. From user-groups to stakeholders? The public interest in fisheries
600 management. Marine Policy 25, 281–292.
601 Nenadovic, M., Epstein, G., 2016. The relationship of social capital and fishers’ participation in multi-
602 level governance arrangements. Environmental Science & Policy 61, 77–86.
603 Nielsen, J.R., Degnbol, P., Viswanathan, K.K., Ahmed, M., 2004. Fisheries co-management—an

604 institutional innovation? Lessons from South East Asia and Southern Africa. Marine Policy 28,
605 151–160.
606 Nutters, H.M., Pinto da Silva, P., 2012. Fishery stakeholder engagement and marine spatial planning:
607 Lessons from the Rhode Island Ocean SAMP and the Massachusetts Ocean Management Plan.
608 Ocean & Coastal Management 67, 9–18.
609 O'Leary, B.C., Brown, R.L., Johnson, D.E., Nordheim, Von, H., Ardron, J., Packeiser, T., Roberts,
610 C.M., 2012. The first network of marine protected areas (MPAs) in the high seas: The process, the
611 challenges and where next. Marine Policy 36, 598–605. doi:10.1016/j.marpol.2011.11.003
612 Pascual-Fernández, J.J., 1999. Participative Management of Artisanal Fisheries in the Canary Islands,
613 in: Symes, D. (Ed.), Southern Waters Issues of Management and Practice. Blackwell's Science,
614 London, Fishing New Books, pp. 66–77.
615 Pálsson, G., 1995. Learning by fishing: practical science and scientific practice, in: Hanna, S.,
616 Munasinghe, M. (Eds.), Property Rights in a Social and Ecological Context: Case Studies and
617 Design. Stockholm: The Beijer Institute, pp. 85–97.
618 Perez de Oliveira, L., 2013. Fishers as advocates of marine protected areas: a case study from Galicia
619 (NW Spain). Marine Policy 41, 95–102.
620 Pimbert, M.P., Pretty, J.N., 1997. Parks, People and Professionals: Putting "participation" into
621 protected-area management, in: Ghimire, K.B., Pimbert, M.P. (Eds.), Social Change and
622 Conservation. Earthscan, pp. 297–340.
623 Pita, C., Pierce, G.J., Theodossiou, I., 2010. Stakeholders' participation in the fisheries management
624 decision-making process: Fishers' perceptions of participation. Marine Policy 34, 1093–1102.
625 Pomeroy, R., Katon, B.M., Harkes, I., 2001. Conditions affecting the success of fisheries co-
626 management: lessons from Asia. Marine Policy 25, 197–208.
627 Pomeroy, R., Parks, J.E., Watson, L.M., 2004. How is your MPA doing?: a guidebook of natural and
628 social indicators for evaluating marine protected area management effectiveness. IUCN, Gland
629 Switzerland and Cambride UK.
630 Pretty, J., 1995. Participatory learning for sustainable agriculture. World Development 23, 1247–1263.
631 doi:10.1016/0305-750X(95)00046-F
632 QSR, 2012. NVivo qualitative data analysis software.
633 Reed, M.S., 2008. Stakeholder participation for environmental management: a literature review.
634 Biological Conservation 141, 2417–2431.
635 Revenga, S., 2003. Las Reservas Marinas Canarias (España), in: Moreno, D., Frías, A. (Eds.), Actas De
636 Las 1 Jornadas Sobre Reservas Marinas Y 1 Reunión De La Red Iberoamericana De Reservas
637 Marinas (RIRM). Publicaciones del MAPA, Secretaría Técn- ica, Madrid.
638 Saunders, F., Mohammed, S.M., Jiddawi, N., Sjöling, S., 2007. An Examination of Governance
639 Arrangements at Kisakasaka Mangrove Reserve in Zanzibar. Environmental Management 41,
640 663–675. doi:10.1007/s00267-007-9050-x
641 Suárez de Vivero, J.-L., Frieyro de Lara, M., 1997. Regions at sea: the administrative region as a base
642 for an alternative fisheries management system for Spain. Ocean & Coastal Management 35, 173–
643 183.
644 Voyer, M., Gladstone, W., Goodall, H., 2012. Methods of social assessment in Marine Protected Area
645 planning: Is public participation enough? Marine Policy 36, 432–439.
646 Weiss, K., Hamann, M., Kinney, M., Marsh, H., 2012. Knowledge exchange and policy influence in a
647 marine resource governance network. Global Environmental Change 22, 178–188.
648 doi:10.1016/j.gloenvcha.2011.09.007
649 West, P., Igoe, J., Brockington, D., 2006. Parks and Peoples: The Social Impact of Protected Areas.
650 Annual review of anthropology 35, 251–277. doi:10.1146/annurev.anthro.35.081705.123308
651 Wilkie, D.S., Morelli, G.A., Demmer, J., Starkey, M., Telfer, P., Steil, M., 2006. Parks and people:
652 Assessing the human welfare effects of establishing protected areas for biodiversity conservation.
653 Conservation Biology 20, 247–249.
654 Yates, K.L., 2014. View from the wheelhouse: Perceptions on marine management from the fishing
655 community and suggestions for improvement. Marine Policy 48, 39–50.
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658 **Figures & Tables**

659 **Figure 1.** (a) Study site location; (b) CPH-MPA zoning and management responsibility

660 **Table 1.** Questions asked to determine perceptions of decision-making processes in CPH-MPA

661 **Table 2**. Marine users perceptions regarding the following statements: (1) marine users are well

informed about marine management decisions, (2) marine users are consulted about marine management decisions, (3) marine users take part in the management process, (4) MPAs take more into account the opinions of marine users. Percentages refer to level of agreement with each statement (1 = strongly agree, 2 = agree, 3 = neither agree nor disagree, 4 = disagree, 5 = strongly disagree). Fishers n=17, Divers n=38

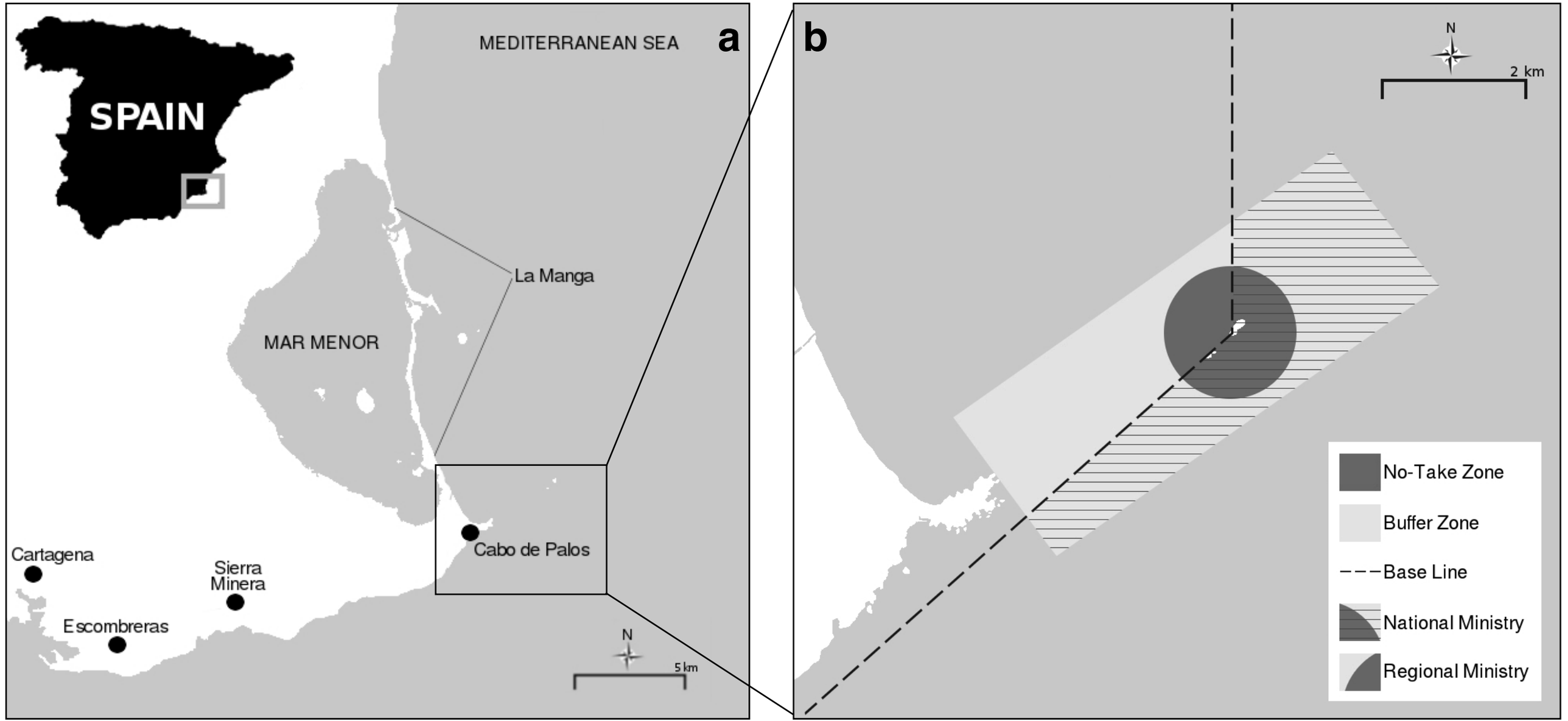
a
MEDITERRANEAN SEA
SPAIN
La Manga
MAR MENOR
Cabo de Palos
Cartagena
Sierra
Minera
Escombreras
N
5 km
b
N
2 km
No-Take Zone
Buffer Zone
Base Line
National Ministry
Regional Ministry

Table 1 Questions asked to determine perceptions of decision-making processes in CPH-MPA

Questions:
What do you think about current management of the marine environment in Cabo de Palos?
Could you describe how decisions about marine management are taken in the area? How, and by whom?
Is there an opportunity for stakeholders to be involved in marine management? If so, who and how?
If decisions are made about the management of the marine environment, is information provided to stakeholders to explain why a particular decision was taken?
Are there ways people can challenge the rules, laws or decisions made regarding marine management?
The previous questions about management, cooperation, and decision-making are all about marine governance. Do you have any suggestions for how governance could be improved?

Table 2. Marine users' perceptions regarding the following statements: (1) marine users are well informed about marine management decisions; (2) marine users are consulted about marine management decisions; (3) marine users take part in the management process; (4) MPAs should take more into account the opinions of marine users. Percentages refer to level of agreement with each statement (1 = strongly agree, 2 = agree, 3 = neither agree nor disagree, 4 = disagree, 5 = strongly disagree). Fishers n=17, Divers n=38

	Informed		Consulted		Take part		MPAs consider users opinions	
	Fishers	Divers	Fishers	Divers	Fishers	Divers	Fishers	Divers
Disagreement (%)	25.00	61.54	87.50	82.05	75.00	58.97	35.29	14.29
NAD (%)	12.50	30.77	0.00	5.13	6.25	23.08	5.88	2.86
Agreement (%)	43.75	7.69	6.25	7.69	6.25	10.26	58.82	82.86
NA/DK (%)	18.75	0.00	6.25	5.13	12.50	7.69	0.00	0.00

Table 2. Marine users' perceptions regarding participation (%)

	Informed[(1)]		Consulted[(2)]		Take part[(3)]		MPAs consider users opinions[(4)]	
	Fishers	Divers	Fishers	Divers	Fishers	Divers	Fishers	Divers
Disagreement[(5)]	25.00	61.54	87.50	82.05	75.00	58.97	35.29	14.29
NAD[(6)]	12.50	30.77	0.00	5.13	6.25	23.08	5.88	2.86
Agreement[(7)]	43.75	7.69	6.25	7.69	6.25	10.26	58.82	82.86
NA/DK[(8)]	18.75	0.00	6.25	5.13	12.50	7.69	0.00	0.00

(1)Marine users are well informed about marine management decisions; (2) marine users are consulted about marine management decisions; (3) marine users take part in the management process; (4) MPAs should take more into account the opinions of marine users.

Percentages refer to level of agreement with each statement (1 = strongly agree, 2 = agree, 3 = neither agree nor disagree, 4 = disagree, 5 = strongly disagree); (5) combines 4 and 5; (6) corresponds to 3; (7) combines 1 and 2; (8) No answer/ Do not know.

Fishers n=17, Divers n=38